



SEQUENCE LISTING

<110> NEDERLANDSE ORGANISATIE VOOR TOEGEPAST
Pieter Hendrik POuwELS
Egbert SMIT
Frans TIELEN

<120> MODIFIED BACTERIAL SURFACE LAYER PROTEINS

<130> 117-509 / N83122 SMW

<140> US 10/500,307

<141> 2004-06-28

<150> PCT/EP02/14749

<151> 2002-12-23

<150> EP 01310937.6

<151> 2001-12-28

<160> 33

<170> PatentIn version 3.1

<210> 1

<211> 1338

<212> DNA

<213> L. acidophilus

<400> 1

```
atgaagaaaa atttaagaat cgttagcgcgt gctgctgctg ctttacttgc tgttgctcca      60
gttgctgctt ctgctgtatc tactgttagc gctgctacta ctattaacgc aagttcatca      120
gcaatcaata ccaacactaa tgctaagtac gatgttgatg taactcctag tgtttctgca      180
gttgctgcaa atactgctaa caacactcca gctattgccg gtaaccttac tgggtactatt      240
tcagcaagtt acaatggtaa gacttatact gctaacttaa aggcagatac tgaaaatgcc      300
actattactg ctgctggtag cactactgcc gttaaactcg ctgaattagc tgcagggtgtg      360
gcttacactg taactgttaa cgatgtttca tttaacttcg gttcagaaaa tgcaggtaag      420
actgttacct ttggttcagc taactcaaat gtaaaattca ccggtacaaa cagtataat      480
caaactgaaa ctaatgtttc tactttgaaa gttaagttag accaaaacgg tgttgcttca      540
cttactaatg tttcaattgc aaacgtatac gcaattaaca ctactgataa cagtaacgta      600
aacttctacg acgtaactag tgggtgctact gtaactaacg gtgccgtttc agttaatgct      660
gataaccaag gtcaagttaa tgttgcaaac gtagttgcag caattaattc aaaatacttt      720
gcagcacaat acgcagataa gaagttaaact actcgctact ctaatactga agatgctatt      780
```

aaggcagcct taaaggacca aaagattgat gtaaactcag taggttactt caaagcacct 840
catactttca ctgttaacgt taaagcaact tcaaatacta atggtaagtc agctactttg 900
ccagtagttg ttactgttcc taatgttgct gagccaactg tagccagcgt aagcaagaga 960
attatgcaca acgcatacta ctacgacaag gacgctaagc gtgttggtac tgacagcggt 1020
aagcggttaca actcagtaag cgtattgcc aacactacta ctatcaacgg taagacttac 1080
taccaagtag ttgaaaacgg taaggctggt gacaagtaca tcaacgctgc aaacatcgat 1140
gggtactaagc gtactttgaa gcacaacgct tacgtttacg catcatcaaa gaagcgtgct 1200
aacaagggttg tattgaagaa ggggtgaagtt gtaactactt acggtgcttc atacacattc 1260
aagaacggcc aaaagtacta caagatcggg gacaacactg acaagactta cgттаagggtt 1320
gcaaacttta gataataa 1338

<210> 2
<211> 413
<212> PRT
<213> L. acidophilus

<400> 2

Ala Thr Thr Ile Asn Ala Ser Ser Ser Ala Ile Asn Thr Asn Thr Asn
1 5 10 15

Ala Lys Tyr Asp Val Asp Val Thr Pro Ser Val Ser Ala Val Ala Ala
20 25 30

Asn Thr Ala Asn Asn Thr Pro Ala Ile Ala Gly Asn Leu Thr Gly Thr
35 40 45

Ile Ser Ala Ser Tyr Asn Gly Lys Thr Tyr Thr Ala Asn Leu Lys Ala
50 55 60

Asp Thr Glu Asn Ala Thr Ile Thr Ala Ala Gly Ser Thr Thr Ala Val
65 70 75 80

Lys Pro Ala Glu Leu Ala Ala Gly Val Ala Tyr Thr Val Thr Val Asn
85 90 95

Asp Val Ser Phe Asn Phe Gly Ser Glu Asn Ala Gly Lys Thr Val Thr
100 105 110

Leu Gly Ser Ala Asn Ser Asn Val Lys Phe Thr Gly Thr Asn Ser Asp
115 120 125

Asn Gln Thr Glu Thr Asn Val Ser Thr Leu Lys Val Lys Leu Asp Gln
130 135 140

Asn Gly Val Ala Ser Leu Thr Asn Val Ser Ile Ala Asn Val Tyr Ala
145 150 155 160

Ile Asn Thr Thr Asp Asn Ser Asn Val Asn Phe Tyr Asp Val Thr Ser
165 170 175

Gly Ala Thr Val Thr Asn Gly Ala Val Ser Val Asn Ala Asp Asn Gln
180 185 190

Gly Gln Val Asn Val Ala Asn Val Val Ala Ala Ile Asn Ser Lys Tyr
195 200 205

Phe Ala Ala Gln Tyr Ala Asp Lys Lys Leu Asn Thr Arg Thr Ala Asn
210 215 220

Thr Glu Asp Ala Ile Lys Ala Ala Leu Lys Asp Gln Lys Ile Asp Val
225 230 235 240

Asn Ser Val Gly Tyr Phe Lys Ala Pro His Thr Phe Thr Val Asn Val
245 250 255

Lys Ala Thr Ser Asn Thr Asn Gly Lys Ser Ala Thr Leu Pro Val Val
260 265 270

Val Thr Val Pro Asn Val Ala Glu Pro Thr Val Ala Ser Val Ser Lys
275 280 285

Arg Ile Met His Asn Ala Tyr Tyr Tyr Asp Lys Asp Ala Lys Arg Val
290 295 300

Gly Thr Asp Ser Val Lys Arg Tyr Asn Ser Val Ser Val Leu Pro Asn
305 310 315 320

Thr Thr Thr Ile Asn Gly Lys Thr Tyr Tyr Gln Val Val Glu Asn Gly

325

330

335

Lys Ala Val Asp Lys Tyr Ile Asn Ala Ala Asn Ile Asp Gly Thr Lys
 340 345 350

Arg Thr Leu Lys His Asn Ala Tyr Val Tyr Ala Ser Ser Lys Lys Arg
 355 360 365

Ala Asn Lys Val Val Leu Lys Lys Gly Glu Val Val Thr Thr Tyr Gly
 370 375 380

Ala Ser Tyr Thr Phe Lys Asn Gly Gln Lys Tyr Tyr Lys Ile Gly Asp
 385 390 395 400

Asn Thr Asp Lys Thr Tyr Val Lys Val Ala Asn Phe Arg
 405 410

<210> 3

<211> 18

<212> PRT

<213> ARTIFICIAL SEQUENCE

<220>

<223> INSERTION LINKER

<400> 3

Arg Gly Ser His His His His His His Gly Ser Gly Thr Ala Thr Thr
 1 5 10 15

Ile Asn

<210> 4

<211> 18

<212> PRT

<213> ARTIFICIAL SEQUENCE

<220>

<223> INSERTION LINKER

<400> 4

Ala Ile Ala Gly Asn Ala Met Ala Ala Ala Arg Gly Asn Leu Thr Gly
 1 5 10 15

Thr Ile

<210> 5
<211> 18
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 5

Val Lys Phe Thr Gly Ala Met Ala Ala Ala Arg Ala Gly Thr Asn Ser
1 5 10 15

Asp Asn

<210> 6
<211> 18
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 6

Thr Asn Val Ser Ile Thr Met Ala Ala Ala Arg Gly Ile Ala Asn Val
1 5 10 15

Tyr Ala

<210> 7
<211> 18
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 7

Tyr Asp Val Thr Ser Ala Met Ala Ala Ala Arg Ala Ser Gly Ala Thr
1 5 10 15

Val Thr

<210> 8
<211> 18
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 8

Asn Ala Ala Asn Ile Val Ala Met Ala Ala Ala Arg Gly Asp Gly Thr
1 5 10 15

Lys Arg

<210> 9
<211> 18
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 9

Pro Ser Val Ser Ala Ser Met Ala Ala Ala Arg Gly Ala Val Ala Ala
1 5 10 15

Asn Thr

<210> 10
<211> 17
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 10

Leu Lys Ala Asp Thr Met Ala Ala Ala Arg Asn Thr Glu Asn Ala Thr
1 5 10 15

Ile

<210> 11
<211> 18
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 11

Ala Glu Leu Ala Ala Ser Met Ala Ala Ala Arg Gly Ala Gly Val Ala
1 5 10 15

Tyr Thr

<210> 12
<211> 18
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 12

Lys Thr Val Thr Leu Ala Met Ala Ala Ala Arg Gly Leu Gly Ser Ala
1 5 10 15

Asn Ser

<210> 13
<211> 18
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 13

Asn Ala Asp Asn Gln Ala Met Ala Ala Ala Arg Gly Gln Val Asn Val
1 5 10 15

Ala Asn

<210> 14
<211> 23
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 14

Thr Thr Ile Asn Ala Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn
1 5 10 15

Leu Glu Ser Ser Ser Ala Ile
20

<210> 15
<211> 19
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 15

Ala Met Val Asn Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ala
1 5 10 15

Arg Gly Asn

<210> 16
<211> 19
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 16

Ala Met Val Asn Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ala
1 5 10 15

Arg Ala Gly

<210> 17
<211> 19
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> INSERTION LINKER

<400> 17

Thr Met Val Asn Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Ala
1 5 10 15

Arg Gly Ile

<210> 18
<211> 39
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 18
gcgcggaattc agatctatcg tggtaagtaa taggacgtg

39

<210> 19
<211> 72
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 19
cagcgaattc ctcgaggttt aaatcttctt ctgaaattaa cttttgttct gcgttaatag

60

tagtagcagc gc

72

<210> 20
<211> 38
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 20
gggggggatcc ggtaccgcta ctactattaa cgcagaac

38

<210> 21
 <211> 40
 <212> DNA
 <213> ARTIFICIAL SEQUENCE

 <220>
 <223> PRIMER

 <400> 21
 ccccgatcc aagcttatcg aagtatcaga agatcctatt 40

 <210> 22
 <211> 39
 <212> DNA
 <213> ARTIFICIAL SEQUENCE

 <220>
 <223> PRIMER

 <400> 22
 gcgcgaattc agatctatcg tggtaagtaa taggacgtg 39

 <210> 23
 <211> 31
 <212> DNA
 <213> ARTIFICIAL SEQUENCE

 <220>
 <223> PRIMER

 <400> 23
 ggggaagctt cagtagtgct accagcagca g 31

 <210> 24
 <211> 19

 <212> DNA
 <213> ARTIFICIAL SEQUENCE

 <220>
 <223> PRIMER

 <400> 24
 cttgctatctt cttgaagag 19

 <210> 25
 <211> 21
 <212> DNA
 <213> ARTIFICIAL SEQUENCE

<220>
 <223> PRIMER

 <400> 25
 gcgttttaaatt cttcttctga a 21

 <210> 26
 <211> 39
 <212> DNA
 <213> ARTIFICIAL SEQUENCE

 <220>
 <223> PRIMER

 <400> 26
 ggggggatcc ggtaccgcta ctactattaa cgcaagttc 39

 <210> 27
 <211> 48
 <212> DNA
 <213> ARTIFICIAL SEQUENCE

 <220>
 <223> PRIMER

 <400> 27
 cccgaattc aagcttttat tagtatacgt ttgcaattga aacattag 48

 <210> 28
 <211> 37
 <212> DNA
 <213> ARTIFICIAL SEQUENCE

 <220>
 <223> PRIMER

 <400> 28
 ccccaagctt ttattatgaa gcaacaccgt ttgggtc 37

 <210> 29
 <211> 37
 <212> DNA
 <213> ARTIFICIAL SEQUENCE

 <220>
 <223> PRIMER

 <400> 29
 ccccaagctt ttattaacca agggtaacag tcttacc 37

<210> 30
<211> 41
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 30
gggggggatcc ggtaccaaag ttaagttaga ccaaaacggt g

41

<210> 31
<211> 41
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 31
gggggggatcc ggtaccctta ctaatgtttc aattgcaaac g

41

<210> 32
<211> 39
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 32
gggggggatcc ggtacctcag ctaactcaaa tgtaaaatt

39

<210> 33
<211> 46
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 33
ccccgaattc aagcttttat taaattctct tgcttagctg ggctac

46